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<p>(21) International Application Number: PCT/US94/01679</p> <p>(22) International Filing Date: 14 February 1994 (14.02.94)</p> <p>(30) Priority Data: 107266 12 October 1993 (12.10.93) IL 104725 14 February 1994 (14.02.94) IL</p> <p>(71) Applicant (<i>for all designated States except US</i>): ORAD, INC. [US/US]; Law Offices of Morse Geller, Suite 202, 116-16 Queens Boulevard, Forest Hills, NY 11375 (US).</p> <p>(72) Inventors; and (75) Inventors/Applicants (<i>for US only</i>): SHARIR, Avi [IL/IL]; 21 Ani Maamim Street, Ramat Hasharon 46 212 (IL). TAMIR, Michael [IL/IL]; 13 Beit Tsuri Street, Ramat Aviv G, Tel Aviv 69 122 (IL).</p> <p>(74) Agents: GALLOWAY, Peter, D. et al.; Ladas & Parry, 26 West 61st Street, New York, NY 10023 (US).</p>			<p>(81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, LV, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report</i></p>
<p>(54) Title: APPARATUS AND METHOD FOR DETECTING, IDENTIFYING AND INCORPORATING ADVERTISEMENTS IN A VIDEO</p> <p>(57) Abstract</p> <p>A system (Figs 7 and 8) and method (Fig 1) for video transmission of active events, for example sports events, having in the background physical images in designated targets, wherein the physical images are electronically exchanged with preselected virtual images, so that objects or shadows actually blocking portions of the physical images will be seen by viewers as blocking the same portions of the virtual images, and the motion of players or a ball blocking the physical image will block corresponding regions of the exchanged virtual image, so that the exchanged electronic image will remain in the background of the event, exactly as the original image.</p>			
<pre> graph TD A[VIDEO IN] --> B[FRAME GRABBING AND AGGRGATING] B --> C{NEW SCENE?} C -- NO --> D[PREDICTION OF ALL LOCATION OF ALL TARGETS] C -- YES --> E[SEARCH FOR THE FIRST TARGET (DETECTION AND IDENTIFICATION)] E --> F[CALCULATION OF SIZE AND ORIENTATION OF FIRST TARGET] F --> G[PREDICTION OF THE LOCATION OF ALL OTHER CONVENTION TARGETS IN ALL FRAMES] G --> H[CALCULATION OF SIZE AND ORIENTATION OF OTHER TARGETS] H --> I[IDENTIFICATION OF HIDDEN PORTIONS IN ALL TARGETS] I --> J[CHOICE AND PREPARATION (SIZE, ORIENTATION, SUPERPOSITION OF THE HIDDEN SURFACES) OF THE REPLACING IMAGES] J --> K[REPLACING IMAGE DATA BANK] K --> L[SUBSTITUTION OF ALL FRAME TARGETS WITH THE REPLACING IMAGES] L --> M[VIDEO OUT] D --> G G --> H H --> I I --> J J --> K K --> L L --> M G --> N[STADIUM DATA BANK] G --> O[TARGETS TRACKER] N --> O O --> G </pre>			